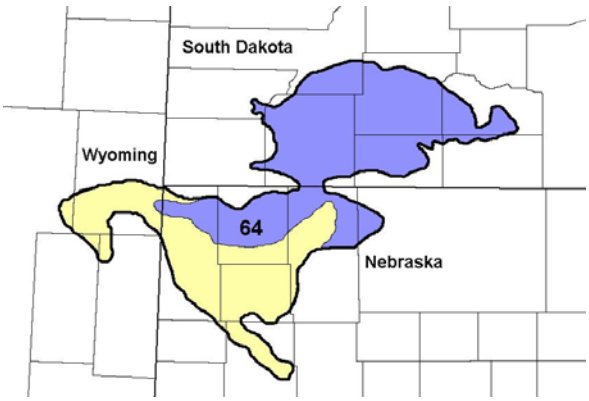
United States Department of Agriculture
Natural Resources Conservation Service

Ecological Site Description



Site Type: Rangeland

Site Name: Sandy 17-20" P.Z.

Site ID: R064XY032NE

Major Land Resource Area: 64 – Mixed Sandy and Silty Tableland

Physiographic Features

This site occurs on nearly level to steeply sloping hillslopes, terraces and alluvial fans.

Landform: hill, terrace, alluvial fan **Aspect:** N/A

	Minimum	Maximum
Elevation (feet):	2900	4000
Slope (percent):	0	30
Water Table Depth (inches):	>72	>72
Flooding:		
Frequency:	None	None
Duration:	None	None
Ponding:		
Depth (inches):	None	None
Frequency:	None	None
Duration:	None	None
Runoff Class:	Negligible	Low

Climatic Features

MLRA 64 is considered to have a continental climate – cold winters and hot summers, low humidity, light rainfall, and much sunshine. Extremes in temperature may also abound. The climate is the result of this MLRA's location near the geographic center of North America. There are few natural barriers on the northern Great Plains and the winds move freely across the plains and account for rapid changes in temperature.

Annual precipitation ranges from 17 to 20 inches per year. The normal average annual temperature is about 47° F. January is the coldest month with average temperatures ranging from about 21° F (Wood, SD) to about 25° F (Hemingford, NE). July is the warmest month with temperatures averaging from about 72° F (Hemingford, NE) to about 76° F (Wood, SD). The range of normal average monthly temperatures between the coldest and warmest months is about 55° F. This large annual range attests to the continental nature of this area's climate. Hourly winds are estimated to average about 11 miles per hour annually, ranging from about 13 miles per hour during the spring to about 10 miles per hour during the summer. Daytime winds are generally stronger than nighttime and occasional strong storms may bring brief periods of high winds with gusts to more than 50 miles per hour.

Growth of native cool season plants begins mid to late March and continues to late June. Native warm season plants begin growth in early May and continue to late August. Green up of cool season plants may occur in September and October when adequate soil moisture is present.

	Minimum	Maximum
Frost-free period (days):	138	143
Freeze-free period (days):	161	163
Mean Annual Precipitation (inches):	17	20

Average Monthly Precipitation (inches) and Temperature (°F):

	Precip. Min.	Precip. Max	Temp. Min.	Temp. Max.
January	0.42	0.46	9.0	35.8
February	0.48	0.61	14.6	40.7
March	1.00	1.22	21.9	47.5
April	1.95	2.15	32.4	61.3
May	3.26	3.38	42.6	72.2
June	2.89	3.27	52.0	82.1
July	2.38	2.73	58.2	90.1
August	1.59	1.96	56.3	89.3
September	1.33	1.58	46.6	79.5
October	1.02	1.38	35.6	66.6
November	0.56	0.65	24.0	49.0
December	0.42	0.50	14.0	38.4

Climate Stations		Period	
Station ID	**Location or Name**	**From**	**To**
NE3755	Hemingford, NE	1964	1999
SD9442	Wood, SD	1948	1999

For local climate stations that may be more representative, refer to http://www.wcc.nrcs.usda.gov.

Influencing Water Features

No significant water features influence this site.

Representative Soil Features

The features common to all soils in this site are the loamy fine sand to very fine sandy loam textured surface soils and slopes of 0 to 30 percent. The soils in this site are well to somewhat excessively drained and formed in eolian deposits, alluvium, colluvium or residuum. The surface layer is 3 to 30 inches thick. The texture of the subsurface generally ranges from loam to fine sand. This site should show slight to no evidence of rills, wind scoured areas or pedestalled plants. Water flow paths are broken, irregular in appearance or discontinuous with numerous debris dams or vegetative barriers. The soil surface is stable and intact. Sub-surface soil layers are not restrictive to water movement and root penetration.

These soils are susceptible to wind and water erosion. The hazard of water erosion increases on slopes greater than about 15 percent. Loss of 50 percent or more of the surface layer of the soils on this site can result in a shift in species composition and/or production.

More information can be found in the various soil survey reports. Contact the local USDA Service Center for soil survey reports that include more detail specific to your location.

Parent Material Kind: eolian deposits, alluvium, colluvium, residuum
Parent Material Origin: sandstone, non-calcareous, and sedimentary, unspecified
Surface Texture: fine sandy loam, loamy very fine sand, loamy fine sand
Surface Texture Modifier: none
Subsurface Texture Group: sandy
Surface Fragments ≤ 3" (% Cover): 0
Surface Fragments > 3" (%Cover): 0
Subsurface Fragments ≤ 3" (% Volume): 0
Subsurface Fragments > 3" (% Volume): 10

	Minimum	Maximum
Drainage Class:	well	somewhat excessively
Permeability Class:	moderately rapid	moderately rapid
Depth (inches):	20	>72
Electrical Conductivity (mmhos/cm)*:	0	2
Sodium Absorption Ratio*:	0	9
Soil Reaction (1:1 Water)*:	5.6	8.4
Soil Reaction (0.1M CaCl2)*:	NA	NA
Available Water Capacity (inches)*:	3	7
Calcium Carbonate Equivalent (percent)*:	0	10

* These attributes represent 0-40 inches in depth or to the first restrictive layer.

Plant Communities

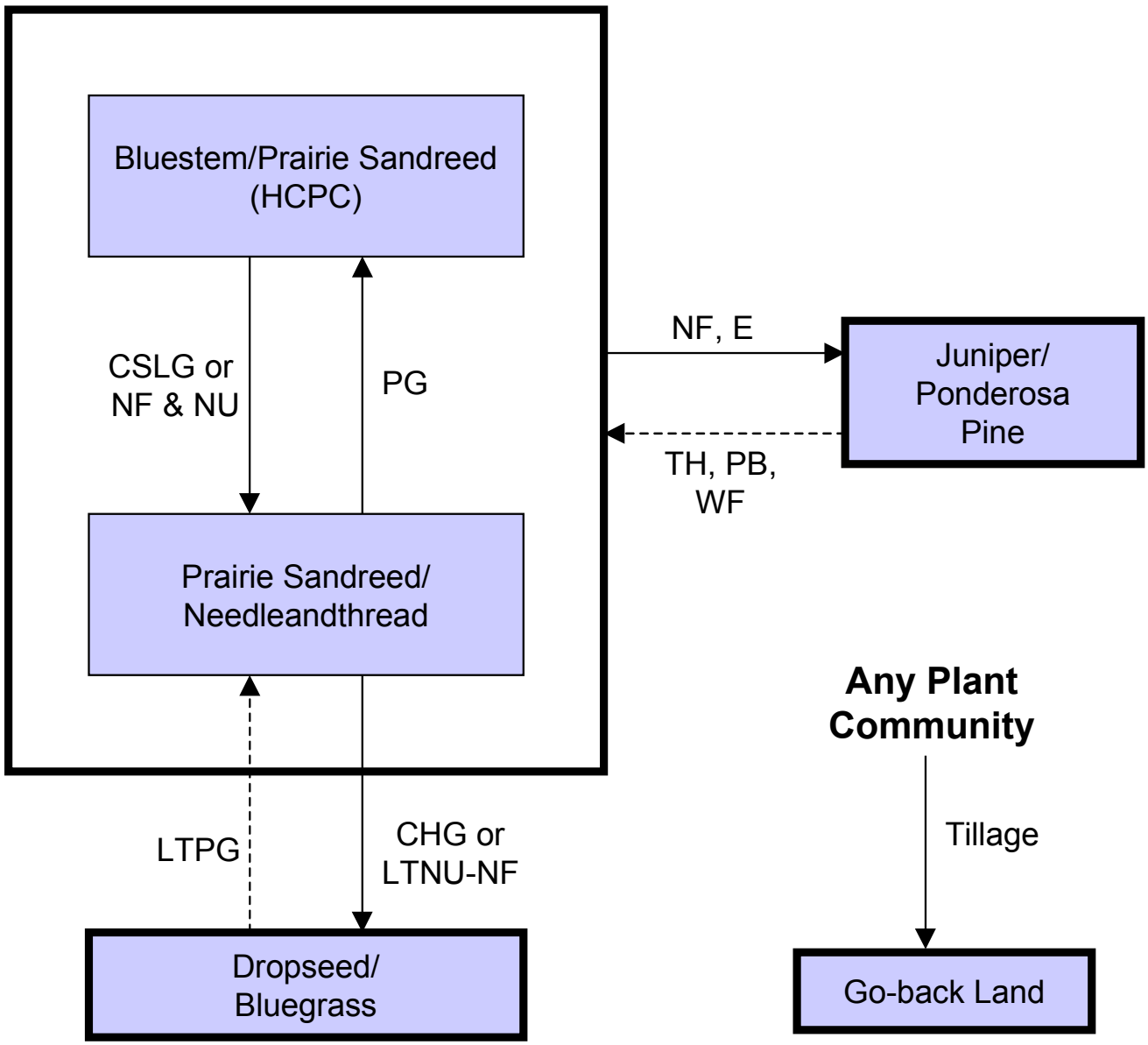
Ecological Dynamics of the Site:
The interpretive plant community developed under Northern Great Plains climatic conditions, and included natural influence of large herbivores and occasional fire. Changes will occur in the plant communities due to management actions and/or climatic conditions. Natural fire played a significant role in the maintenance of this site by limiting conifer establishment. The recent control of fire, and the increased seed source from shelterbelts results in occasional juniper and/or ponderosa pine encroachment.

As this site deteriorates from improper management, species such as western wheatgrass, prairie sandreed, needleandthread, prairie junegrass, Scribner's panicum, and sedges will increase. Continued deterioration results in a community dominated by bluegrass, cheatgrass, Scribner's panicum, sand dropseed, and western ragweed. Warm season grasses such as prairie sandreed, sand bluestem, big bluestem and little bluestem will decrease in frequency and production.

The plant community upon which interpretations are primarily based is the Historic Climax Plant Community (HCPC). The HCPC has been determined by study of rangeland relic areas, areas protected from excessive disturbance, and areas under long-term rotational grazing regimes. Trends in plant community dynamics ranging from heavily grazed to lightly grazed areas, seasonal use pastures, and historical accounts also have been used.

The following is a diagram that illustrates the common plant communities that can occur on the site and the transition pathways between communities. The ecological processes will be discussed in more detail in the plant community descriptions following the diagram.

Plant Communities and Transitional Pathways



CHG - Continuous heavy grazing; **CSLG** - Continuous season-long grazing; **E** - Encroachment; **HCPC** - Historic Climax Plant Community; **LTPG** - Long-term prescribed grazing; **NF** - No fire; **NU** - Non use; **PB** - Prescribed burning; **PG** - Prescribed grazing; **TH** - Timber harvest; **WF** - Wildfire.

Plant Community Composition and Group Annual Production

			Bluestem/Prairie Sandreed (HCPC)		
COMMON/GROUP NAME	**SCIENTIFIC NAME**	**SYMBOL**	**Group**	**lbs./acre**	**% Comp**
GRASSES & GRASS-LIKES				*1920 - 2160*	*80 - 90*
BLUESTEMS			**1**	**240 - 720**	**10 - 30**
sand bluestem	Andropogon hallii	ANHA	1	240 - 720	10 - 30
big bluestem	Andropogon gerardii	ANGE	1	240 - 720	10 - 30
			2	**240 - 720**	**10 - 30**
prairie sandreed	Calamovilfa longifolia	CALO	2	240 - 720	10 - 30
little bluestem	Schizachyrium scoparium	SCSC	2	240 - 720	10 - 30
NEEDLEGRASSES			**3**	**360 - 600**	**15 - 25**
needleandthread	Hesperostipa comata ssp. comata	HECOC8	3	360 - 600	15 - 25
green needlegrass	Nassella viridula	NAVI4	3	0 - 120	0 - 5
GRAMAS			**4**	**120 - 360**	**5 - 15**
hairy grama	Bouteloua hirsuta	BOHI2	4	0 - 120	0 - 5
blue grama	Bouteloua gracilis	BOGR2	4	120 - 360	5 - 15
NATIVE GRASSES & GRASS-LIKES			**5**	**240 - 600**	**10 - 25**
Scribner panicum	Dichanthelium oligosanthes var. scribnerianur	DIOLS	5	24 - 120	1 - 5
switchgrass	Panicum virgatum	PAVI2	5	120 - 240	5 - 10
sand dropseed	Sporobolus cryptandrus	SPCR	5	24 - 120	1 - 5
sideoats grama	Bouteloua curtipendula	BOCU	5	48 - 168	2 - 7
prairie junegrass	Koeleria macrantha	KOMA	5	24 - 72	1 - 3
sedge	Carex spp.	CAREX	5	24 - 72	1 - 3
western wheatgrass	Pascopyrum smithii	PASM	5	120 - 240	5 - 10
other perennial grasses		2GP	5	24 - 72	1 - 3
FORBS			*7*	*120 - 240*	*5 - 10*
annual eriogonum	Eriogonum annuum	ERAN4	7	24 - 48	1 - 2
annual sunflower	Helianthus annuus	HEAN3	7	0 - 24	0 - 1
bush morningglory	Ipomoea leptophylla	IPLE	7	24 - 48	1 - 2
cudweed sagewort	Artemisia ludoviciana	ARLU	7	24 - 48	1 - 2
false boneset	Brickellia eupatorioides	BREU	7	0 - 24	0 - 1
gayfeather	Liatris spp.	LIATR	7	0 - 24	0 - 1
goldenrod	Solidago spp.	SOLID	7	0 - 24	0 - 1
green sagewort	Artemisia dracunculus	ARDR4	7	0 - 24	0 - 1
hairy goldaster	Heterotheca villosa	HEVI4	7	0 - 24	0 - 1
heath aster	Symphyotrichum ericoides	SYER	7	0 - 24	0 - 1
hoary puccoon	Lithospermum canescens	LICA12	7	0 - 24	0 - 1
lupine	Lupinus spp.	LUPIN	7	24 - 48	1 - 2
penstemon	Penstemon spp.	PENST	7	0 - 24	0 - 1
prairie clover	Dalea spp.	DALEA	7	0 - 24	0 - 1
prairie coneflower	Ratibida columnifera	RACO3	7	24 - 48	1 - 2
purple coneflower	Echinacea angustifolia	ECAN2	7	0 - 24	0 - 1
pussytoes	Antennaria spp.	ANTEN	7	0 - 24	0 - 1
rush skeletonweed	Lygodesmia juncea	LYJU	7	0 - 24	0 - 1
scarlet globemallow	Sphaeralcea coccinea	SPCO	7	0 - 24	0 - 1
scurfpea	Psoralidium spp.	PSORA2	7	24 - 72	1 - 3
spiderwort	Tradescantia spp.	TRADE	7	0 - 24	0 - 1
stiff sunflower	Helianthus pauciflorus	HEPA19	7	0 - 24	0 - 1
Texas croton	Croton texensis	CRTE4	7	0 - 24	0 - 1
verbena	Verbena spp.	VERBE	7	0 - 24	0 - 1
western ragweed	Ambrosia psilostachya	AMPS	7	0 - 48	0 - 2
other perennial forbs		2FP	7	0 - 48	0 - 2
other annual forbs		2FA	7	0 - 24	0 - 1
SHRUBS			*8*	*48 - 240*	*2 - 10*
cactus	Opuntia spp.	OPUNT	8	0 - 48	0 - 2
fringed sagewort	Artemisia frigida	ARFR4	8	0 - 48	0 - 2
leadplant	Amorpha canescens	AMCA6	8	24 - 168	1 - 7
rose	Rosa spp.	ROSA5	8	24 - 120	1 - 5
small soapweed	Yucca glauca	YUGL	8	24 - 48	1 - 2
western sandcherry	Prunus pumila var. besseyi	PRPUB	8	0 - 24	0 - 1
other shrubs		2SHRUB	8	0 - 48	0 - 2
TREES			*9*	*0 - 24*	*0 - 1*
ponderosa pine	Pinus ponderosa	PIPO	9	0 - 24	0 - 1
juniper	Juniperus spp.	JUNIP	9	0 - 24	0 - 1

Annual Production lbs./acre	LOW	RV	HIGH
GRASSES & GRASS-LIKES	1640 -	2064	- 2475
FORBS	115 -	180	- 250
SHRUBS	45 -	144	- 250
TREES	0 -	12	- 25
TOTAL	1800 -	2400	- 3000

This list of plants and their relative proportions are based on near normal years. Fluctuations in species composition and relative production may change from year to year dependent upon precipitation or other climatic factors. RV = Representative Value.

Plant Community Composition and Group Annual Production

		Bluestem/Prairie Sandreed (HCPC)			Prairie Sandreed/ Needleandthread			Dropseed/Bluegrass			Juniper/Ponderosa Pine		
COMMON/GROUP NAME	**SYMBOL**	**Grp**	**lbs./acre**	**% Comp**	**Grp**	**lbs./acre**	**% Comp**	**Grp**	**lbs./acre**	**% Comp**	**Grp**	**lbs./acre**	**% Comp**
GRASSES & GRASS-LIKES			*1920 - 2160*	*80 - 90*		*1600 - 1900*	*80 - 95*		*980 - 1260*	*70 - 90*		*540 - 720*	*60 - 80*
BLUESTEM		**1**	**240 - 720**	**10 - 30**	**1**	**40 - 200**	**2 - 10**	**1**	**0 - 28**	**0 - 2**	**1**	**0 - 45**	**0 - 5**
sand bluestem	ANHA	1	240 - 720	10 - 30	1	40 - 200	2 - 10	1	0 - 28	0 - 2	1	0 - 45	0 - 5
big bluestem	ANGE	1	240 - 720	10 - 30	1	40 - 200	2 - 10	1	0 - 28	0 - 2	1	0 - 45	0 - 5
		2	**240 - 720**	**10 - 30**	**2**	**400 - 800**	**20 - 40**	**2**	**28 - 140**	**2 - 10**	**2**	**45 - 90**	**5 - 10**
prairie sandreed	CALO	2	240 - 720	10 - 30	2	300 - 700	15 - 35	2	28 - 140	2 - 10	2	0 - 18	0 - 2
little bluestem	SCSC	2	240 - 720	10 - 30	2	40 - 200	2 - 10	2	0 - 28	0 - 2	2	45 - 90	5 - 10
NEEDLEGRASSES		**3**	**360 - 600**	**15 - 25**	**3**	**300 - 600**	**15 - 30**	**3**	**28 - 70**	**2 - 5**	**3**	**90 - 180**	**10 - 20**
needleandthread	HECOC8	3	360 - 600	15 - 25	3	300 - 600	15 - 30	3	28 - 70	2 - 5	3	90 - 135	10 - 15
green needlegrass	NAVI4	3	0 - 120	0 - 5	3	0 - 100	0 - 5				3	45 - 90	5 - 10
GRAMA		**4**	**120 - 360**	**5 - 15**	**4**	**100 - 400**	**5 - 20**	**4**	**70 - 350**	**5 - 25**	**4**	**45 - 90**	**5 - 10**
hairy grama	BOHI2	4	0 - 120	0 - 5	4	0 - 100	0 - 5	4	0 - 70	0 - 5	4	45 - 90	5 - 10
blue grama	BOGR2	4	120 - 360	5 - 15	4	100 - 400	5 - 20	4	70 - 350	5 - 25	4	45 - 90	5 - 10
NATIVE GRASSES/GRASS-LIKES		**5**	**240 - 600**	**10 - 25**	**5**	**300 - 600**	**15 - 30**	**5**	**350 - 630**	**25 - 45**	**5**	**45 - 225**	**5 - 25**
Scribner panicum	DIOLS	5	24 - 120	1 - 5	5	100 - 200	5 - 10	5	140 - 280	10 - 20	5	0 - 9	0 - 1
switchgrass	PAVI2	5	120 - 240	5 - 10	5	0 - 100	0 - 5	5	0 - 28	0 - 2	5	0 - 45	0 - 5
sand dropseed	SPCR	5	24 - 120	1 - 5	5	40 - 200	2 - 10	5	140 - 420	10 - 30	5	18 - 90	2 - 10
sideoats grama	BOCU	5	48 - 168	2 - 7	5	0 - 40	0 - 2	5	0 - 28	0 - 2	5	9 - 45	1 - 5
prairie junegrass	KOMA	5	24 - 72	1 - 3	5	20 - 100	1 - 5	5	70 - 140	5 - 10	5	9 - 45	1 - 5
sedge	CAREX	5	24 - 72	1 - 3	5	100 - 200	5 - 10	5	70 - 210	5 - 15	5	18 - 72	2 - 8
western wheatgrass	PASM	5	120 - 240	5 - 10	5	100 - 300	5 - 15	5	0 - 140	0 - 10	5	18 - 90	2 - 10
sixweeks fescue	VUOC							5	14 - 42	1 - 3	5	9 - 18	1 - 2
Canada wildrye	ELCA4										5	0 - 45	0 - 5
other perennial grasses	2GP	5	24 - 72	1 - 3	5	20 - 60	1 - 3	5	0 - 28	0 - 2	5	0 - 45	0 - 5
NON-NATIVE GRASSES		**6**			**6**			**6**	**140 - 420**	**10 - 30**	**6**	**9 - 90**	**1 - 10**
cheatgrass	BRTE							6	0 - 70	0 - 5	6	0 - 45	0 - 5
bluegrass	POA							6	140 - 420	10 - 30	6	9 - 45	1 - 5
FORBS		*7*	*120 - 240*	*5 - 10*	*7*	*20 - 200*	*1 - 10*	*7*	*70 - 280*	*5 - 20*	*7*	*45 - 90*	*5 - 10*
annual eriogonum	ERAN4	7	24 - 48	1 - 2	7	20 - 40	1 - 2	7	14 - 28	1 - 2	7	0 - 18	0 - 2
annual sunflower	HEAN3	7	0 - 24	0 - 1	7	0 - 20	0 - 1	7	0 - 28	0 - 2	7	0 - 9	0 - 1
bush morningglory	IPLE	7	24 - 48	1 - 2	7	20 - 60	1 - 3	7	0 - 28	0 - 2			
common mullein	VETH				7	0 - 20	0 - 1	7	0 - 28	0 - 2	7	9 - 18	1 - 2
cudweed sagewort	ARLU	7	24 - 48	1 - 2	7	20 - 60	1 - 3	7	14 - 42	1 - 3	7	0 - 9	0 - 1
false boneset	BREU	7	0 - 24	0 - 1	7	0 - 20	0 - 1				7	0 - 9	0 - 1
gayfeather	LIATR	7	0 - 24	0 - 1	7	0 - 20	0 - 1	7	0 - 14	0 - 1	7	0 - 9	0 - 1
goldenrod	SOLID	7	0 - 24	0 - 1	7	0 - 20	0 - 1	7	0 - 14	0 - 1	7	9 - 27	1 - 3
green sagewort	ARDR4	7	0 - 24	0 - 1	7	20 - 100	1 - 5	7	28 - 210	2 - 15	7	9 - 27	1 - 3
hairy goldaster	HEVI4	7	0 - 24	0 - 1	7	20 - 40	1 - 2	7	14 - 42	1 - 3			
heath aster	SYER	7	0 - 24	0 - 1	7	20 - 40	1 - 2	7	14 - 42	1 - 3	7	9 - 18	1 - 2
hoary puccoon	LICA12	7	0 - 24	0 - 1	7	0 - 20	0 - 1	7	0 - 14	0 - 1			
lupine	LUPIN	7	24 - 48	1 - 2	7	20 - 40	1 - 2	7	14 - 28	1 - 2	7	0 - 18	0 - 2
penstemon	PENST	7	0 - 24	0 - 1	7	0 - 20	0 - 1	7	0 - 14	0 - 1	7	0 - 9	0 - 1
prairie clover	DALEA	7	0 - 24	0 - 1	7	0 - 20	0 - 1				7	0 - 9	0 - 1
prairie coneflower	RACO3	7	24 - 48	1 - 2	7	20 - 40	1 - 2	7	0 - 14	0 - 1	7	9 - 18	1 - 2
purple coneflower	ECAN2	7	0 - 24	0 - 1	7	0 - 20	0 - 1	7	0 - 14	0 - 1	7	0 - 9	0 - 1
pussytoes	ANTEN	7	0 - 24	0 - 1	7	0 - 20	0 - 1	7	0 - 28	0 - 2	7	0 - 27	0 - 3
Rocky Mountain beeplant	CLSE							7	0 - 14	0 - 1			
rush skeletonweed	LYJU	7	0 - 24	0 - 1	7	0 - 20	0 - 1	7	0 - 28	0 - 2	7	0 - 9	0 - 1
scarlet globemallow	SPCO	7	0 - 24	0 - 1	7	0 - 20	0 - 1	7	0 - 14	0 - 1	7	0 - 9	0 - 1
scurfpea	PSORA2	7	24 - 72	1 - 3	7	20 - 60	1 - 3	7	0 - 14	0 - 1	7	0 - 9	0 - 1
spiderwort	TRADE	7	0 - 24	0 - 1	7	0 - 20	0 - 1	7	0 - 14	0 - 1	7	0 - 18	0 - 2
stiff sunflower	HEPA19	7	0 - 24	0 - 1	7	0 - 20	0 - 1						
sweetclover	MELIL				7	0 - 20	0 - 1	7	0 - 42	0 - 3	7	0 - 9	0 - 1
Texas croton	CRTE4	7	0 - 24	0 - 1	7	0 - 20	0 - 1	7	0 - 14	0 - 1			
thistle	CIRSI				7	0 - 20	0 - 1	7	0 - 28	0 - 2	7	0 - 18	0 - 2
verbena	VERBE	7	0 - 24	0 - 1	7	0 - 20	0 - 1	7	14 - 42	1 - 3	7	9 - 27	1 - 3
western ragweed	AMPS	7	0 - 48	0 - 2	7	40 - 100	2 - 5	7	70 - 210	5 - 15	7	0 - 18	0 - 2
other perennial forbs	2FP	7	0 - 48	0 - 2	7	0 - 40	0 - 2	7	0 - 28	0 - 2	7	0 - 27	0 - 3
other annual forbs	2FA	7	0 - 24	0 - 1	7	0 - 20	0 - 1	7	0 - 70	0 - 5	7	0 - 45	0 - 5
SHRUBS		*8*	*48 - 240*	*2 - 10*	*8*	*20 - 200*	*1 - 10*	*8*	*14 - 140*	*1 - 10*	*8*	*45 - 180*	*5 - 20*
broom snakeweed	GUSA2							8	0 - 28	0 - 2	8	0 - 9	0 - 1
cactus	OPUNT	8	0 - 48	0 - 2	8	0 - 40	0 - 2	8	14 - 70	1 - 5	8	9 - 27	1 - 3
currant	RIBES										8	0 - 27	0 - 3
fringed sagewort	ARFR4	8	0 - 48	0 - 2	8	0 - 40	0 - 2	8	0 - 70	0 - 5	8	0 - 27	0 - 3
leadplant	AMCA6	8	24 - 168	1 - 7	8	20 - 100	1 - 5	8	0 - 28	0 - 2	8	9 - 45	1 - 5
poison ivy	TORY										8	18 - 45	2 - 5
rose	ROSA5	8	24 - 120	1 - 5	8	20 - 100	1 - 5	8	0 - 28	0 - 2	8	9 - 45	1 - 5
skunkbush sumac	RHTR										8	9 - 63	1 - 7
small soapweed	YUGL	8	24 - 48	1 - 2	8	20 - 40	1 - 2	8	14 - 42	1 - 3	8	0 - 27	0 - 3
western sandcherry	PRPUB	8	0 - 24	0 - 1							8	0 - 9	0 - 1
other shrubs	2SHRUB	8	0 - 48	0 - 2	8	0 - 40	0 - 2	8	0 - 28	0 - 2	8	0 - 45	0 - 5
TREES		*9*	*0 - 24*	*0 - 1*	*9*	*0 - 20*	*0 - 1*	*9*	*0 - 14*	*0 - 1*	*9*	*45 - 135*	*5 - 15*
ponderosa pine	PIPO	9	0 - 24	0 - 1	9	0 - 20	0 - 1	9	0 - 14	0 - 1	9	45 - 135	5 - 15
juniper	JUNIP	9	0 - 24	0 - 1	9	0 - 20	0 - 1	9	0 - 14	0 - 1	9	45 - 135	5 - 15

Annual Production lbs./acre	LOW RV HIGH	LOW RV HIGH	LOW RV HIGH	LOW RV HIGH
GRASSES & GRASS-LIKES	1640 - 2064 - 2475	1470 - 1770 - 2065	825 - 1141 - 1340	380 - 630 - 1080
FORBS	115 - 180 - 250	15 - 110 - 205	65 - 175 - 300	40 - 68 - 95
SHRUBS	45 - 144 - 250	15 - 110 - 205	10 - 77 - 145	40 - 113 - 185
TREES	0 - 12 - 25	0 - 10 - 25	0 - 7 - 15	40 - 90 - 140
TOTAL	1800 - 2400 - 3000	1500 - 2000 - 2500	900 - 1400 - 1800	500 - 900 - 1500

This list of plants and their relative proportions are based on near normal years. Fluctuations in species composition and relative production may change from year to year dependent upon precipitation or other climatic factors. RV = Representative value.

Plant Community and Vegetation State Narratives

Following are the narratives for each of the described plant communities. These plant communities may not represent every possibility, but they are the most prevalent and repeatable plant communities. The plant composition tables shown above have been developed from the best available knowledge at the time of this revision. As more data are collected, some of these plant communities may be revised or removed, and new ones may be added. None of these plant communities should necessarily be thought of as "Desired Plant Communities". According to the USDA NRCS National Range and Pasture Handbook, Desired Plant Communities (DPC's) will be determined by the decision-makers and will meet minimum quality criteria established by the NRCS. The main purpose for including any description of a plant community here is to capture the current knowledge and experience at the time of this revision.

Bluestem/Prairie Sandreed Plant Community

This is the interpretive plant community for this site, and is also considered the Historic Climax Plant Community (HCPC). The community evolved with grazing by large herbivores and occasional fire and can be found on areas that are properly managed. The potential vegetation is about 80% grasses or grass-like plants, 10% forbs, and 10% shrubs. Warm-season mid and tall grasses dominate the plant community.

Principal grasses are sand bluestem, big bluestem, prairie sandreed and little bluestem. Dominant cool season grasses include needleandthread and western wheatgrass. Grama and sedge occur as an understory. Forbs and shrubs are not abundant but are present. The diversity in plant species allows for high drought tolerance. This is a sustainable plant community in terms of site/soil stability, watershed function, and biologic integrity.

The following growth curve shows the estimated monthly percentages of total annual growth of the dominant species expected during a normal year:
Growth curve number: NE6405
Growth curve name: Pine Ridge/Badlands, warm-season dominant.
Growth curve description: Warm-season dominant.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	3	7	15	20	30	15	5	5	0	0

Transitional pathways and/or community pathways leading to other plant communities are as follows:

- Continuous season-long grazing, or non-use and no fire will convert the plant community to the *Prairie Sandreed/Needleandthread Plant Community*.
- No fire and encroachment from adjacent communities can convert this plant community to the *Juniper/Ponderosa Pine Plant Community*.

Prairie Sandreed/Needleandthread Plant Community

This plant community is resilient and develops from repeated season-long grazing with moderate stocking rates. The more palatable bluestems have decreased while prairie sandreed, western wheatgrass, and needleandthread have increased. Forbs and shrubs do not change significantly in composition compared to the HCPC. This plant community maintains diversity, but production levels are lower.

With non-use by herbivores and no fire, litter can accumulate and the production will eventually be reduced. Initially, the composition will not change. However, with long term non-use and no fire, this plant community can deteriorate and be susceptible to non-native plant invasion.

The following growth curve shows the estimated monthly percentages of total annual growth of the dominant species expected during a normal year:
Growth curve number: NE6404
Growth curve name: Pine Ridge/Badlands, warm-season dominant, cool-season sub-dominant.
Growth curve description: Warm-season dominant, cool-season sub-dominant.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	5	8	15	24	23	15	5	5	0	0

Transitional pathways and/or community pathways leading to other plant communities are as follows:

- Continuous heavy grazing, or long-term non-use and no fire will convert the plant community to the *Dropseed/Bluegrass Plant Community*.
- No fire and encroachment from adjacent communities can convert this plant community to the *Juniper/Ponderosa Pine Plant Community*.
- Prescribed grazing will convert the plant community to the *Bluestem/Prairie Sandreed Plant Community (HCPC)*.

Dropseed/Bluegrass Plant Community

This plant community developed under continuous heavy grazing over a period of years, or from long-term non-use by herbivores and no fire. The grasses in this plant community consist of sand dropseed, bluegrass, Scribners panicum, sedge and blue grama. Green sagewort, western ragweed and other less palatable forbs will begin to increase in this plant community, especially with above average precipitation. Native annuals and non-native species such as sixweeks fescue and annual brome will begin to increase and/or invade on this plant community.

Prairie sandreed and needleandthread can still be found, but in lesser amounts. If these remnants are virtually eliminated through excessive disturbance, it may become difficult to return to the Prairie Sandreed/Needleandthread Plant Community.

The following growth curve shows the estimated monthly percentages of total annual growth of the dominant species expected during a normal year:
Growth curve number: NE6403
Growth curve name: Pine Ridge/Badlands, cool-season/warm-season co-dominant.
Growth curve description: Cool-season, warm-season co-dominant.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	5	10	20	25	20	10	5	5	0	0

Transitional pathways and/or community pathways leading to other plant communities are as follows:

- Long-term prescribed grazing will lead this plant community through successional stages, and may eventually move this plant community to the *Prairie Sandreed/Needleandthread Plant Community*. This pathway will be effective only if the remnant native species are present.

Juniper/Ponderosa Pine Plant Community

Historically, ponderosa pine and juniper were confined to ridges and steep shallow slopes located adjacent to this ecological site. Ponderosa pine and juniper are expanding on to this ecological site due to the suppression of fire, and the available seed source from wildlife plantings and shelterbelts. Juniper/pine canopy cover consists of more than 10% of mature trees, but total canopy cover can be considerably higher. The understory production is made up of about 70% grass and grass-like species, 10% forbs and 20% shrubs.

Dominant grasses include needleandthread, blue grama, sand dropseed and western wheatgrass. Some grasses of secondary importance include Canada wildrye and threadleaf sedge.

This plant community can be changed easily in the early stages of encroachment. The invading trees can be removed with a prescribed fire followed by prescribed grazing. If the encroachment is allowed to continue without managing the invading trees, and the mature tree canopy cover becomes high enough, the plant community will become resistant to change. The herbaceous vegetation in the understory is capable of enduring fire; however, very hot crown fires will have a detrimental effect to the plant community. Reclamation of juniper/pine dominated areas can be costly and prove to be temporary without proper management (i.e. prescribed burning and prescribed grazing).

The following growth curve is an estimate of the monthly percentages of total annual growth expected during a normal year:
Growth curve number: NE6411
Growth curve name: Pine Ridge/Badlands, heavy conifer canopy.
Growth curve description: Mature ponderosa pine/juniper overstory.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	3	7	10	20	28	15	5	4	4	2	1

Transitional pathways and/or community pathways leading to other plant communities are as follows:

- Prescribed burning, timber harvest or hot crown wildfires may lead this plant community through successional stages, and may eventually move this plant community to the *Bluestem/Prairie Sandreed Plant Community*. This pathway will be effective only if the remnant native species are present.

Go-back Land

The Go-back plant community can be reached whenever severe mechanical disturbance occurs (e.g., tilled and abandoned land, either past or present). During the early successional stages, the species that mainly dominate are annual grasses and forbs, later being replaced by both native and introduced perennials. Vegetation varies greatly, sometimes being dominated by three-awn, annual brome, crested wheatgrass, buffalograss, dropseeds, broom snakeweed, verbena, mullein, sweetclover and non-native thistles. Other plants that commonly occur include western wheatgrass, deathcamas, prickly lettuce, marestail, kochia, foxtail and sunflowers. Bare ground is prevalent due to the loss of organic matter and lower overall soil quality.

Ecological Site Interpretations

Animal Community – Wildlife Interpretations

-- Under Development --

Bluestem/Prairie Sandreed Plant Community:

Prairie Sandreed/Needleandthread Plant Community:

Dropseed/Bluegrass Plant Community:

Juniper/Ponderosa Pine Plant Community:

Animal Preferences (Quarterly – 1,2,3,4†)

Common Name	Cattle				Sheep				Horses				Deer				Antelope				Bison				Elk			
Grasses and Grass-likes																												
big bluestem	U	D	P	D	U	D	U	U	U	D	P	D	U	D	U	U	U	D	U	U	U	D	P	D	U	D	P	D
blue grama	U	D	P	U	D	P	P	D	U	D	P	U	D	P	P	D	D	P	P	D	U	D	P	U	U	D	P	U
green needlegrass	U	P	U	D	N	P	N	P	U	P	U	D	N	P	N	P	N	P	N	P	U	P	U	D	U	P	U	D
hairy grama	U	D	P	U	D	P	P	D	U	D	P	U	D	P	P	D	D	P	P	D	U	D	P	U	U	D	P	U
little bluestem	U	D	D	U	N	D	N	N	U	D	D	U	N	D	N	N	N	D	N	N	U	D	D	U	U	D	D	U
needleandthread	U	D	U	D	N	D	N	U	U	D	U	D	N	D	N	U	N	D	N	U	U	D	U	D	U	D	U	D
prairie junegrass	U	D	U	D	N	D	N	U	U	D	U	D	N	D	N	U	N	D	N	U	U	D	U	D	U	D	U	D
prairie sandreed	U	D	D	U	U	D	U	U	U	D	D	U	U	U	D	U	U	U	D	U	U	D	D	U	U	D	D	U
sand bluestem	U	D	P	D	U	D	U	U	U	D	P	D	U	D	U	U	U	D	U	U	U	D	P	D	U	D	P	D
sand dropseed	N	U	N	N	N	U	N	N	N	U	N	N	N	U	N	N	N	U	N	N	N	U	N	N	N	U	N	N
Scribner panicum	U	U	D	U	N	U	N	N	U	U	D	U	N	U	N	N	N	U	N	N	U	U	D	U	U	U	D	U
sedge	U	D	U	D	U	P	N	D	U	D	U	D	U	D	U	D	U	D	U	D	U	D	U	D	U	D	U	D
sideoats grama	U	D	P	U	U	P	D	U	U	D	P	U	U	P	D	U	U	P	D	U	U	D	P	U	U	D	P	U
switchgrass	U	D	D	U	U	D	U	U	U	D	D	U	N	N	N	N	N	N	N	N	U	D	D	U	U	D	D	U
western wheatgrass	U	P	D	U	N	D	N	N	U	P	D	U	N	D	N	N	N	D	N	N	U	P	D	U	U	P	D	U
Forbs																												
annual eriogonum	U	D	U	U	N	U	U	N	U	D	U	U	N	U	U	N	N	U	U	N	U	D	U	U	N	U	U	N
annual sunflower	U	U	D	U	U	D	U	U	U	U	D	U	U	D	U	U	U	D	U	U	U	U	D	U	U	D	U	U
bush morningglory	U	D	P	U	U	D	D	U	U	D	P	U	U	D	D	U	U	D	D	U	U	D	P	U	U	D	D	U
cudweed sagewort	U	U	U	U	U	U	D	U	U	U	U	U	U	U	D	U	U	U	D	U	U	U	U	U	U	U	D	U
false boneset	U	U	D	U	N	D	U	N	U	U	D	U	N	D	U	N	N	D	U	N	U	U	D	U	N	D	U	N
gayfeather	U	U	D	U	U	P	P	U	U	U	D	U	U	P	P	U	U	P	P	U	U	U	D	U	U	P	P	U
goldenrod	U	U	D	U	N	U	U	N	U	U	D	U	N	U	U	N	N	U	U	N	U	U	D	U	N	U	U	N
green sagewort	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
hairy goldaster	U	U	D	U	N	N	N	N	U	U	D	U	N	N	N	N	N	N	N	N	U	U	D	U	N	N	N	N
heath aster	U	U	D	U	U	U	P	U	U	U	D	U	U	U	P	U	U	U	P	U	U	U	D	U	U	U	P	U
hoary puccoon	U	U	U	U	N	U	U	N	U	U	U	U	N	U	U	N	N	U	U	N	U	U	U	U	N	U	U	N
lupine	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
penstemon	U	U	U	U	U	P	P	U	U	U	U	U	U	P	P	U	U	P	P	U	U	U	U	U	U	P	P	U
prairie clover	U	D	P	U	U	P	P	U	U	D	P	U	U	P	P	U	U	P	P	U	U	D	P	U	U	P	P	U
prairie coneflower	U	U	D	U	U	P	P	U	U	U	D	U	U	P	P	U	U	P	P	U	U	U	D	U	U	P	P	U
purple coneflower	U	U	D	U	U	P	P	U	U	U	D	U	U	P	P	U	U	P	P	U	U	U	D	U	U	P	P	U
pussytoes	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
rush skeletonweed	U	U	U	U	N	N	N	N	U	U	U	U	N	N	N	N	N	N	N	N	U	U	U	U	N	N	N	N
scarlet globemallow	U	U	D	U	U	D	D	U	U	U	D	U	U	D	D	U	U	D	D	U	U	U	D	U	U	D	D	U
scurfpea	U	U	U	U	N	U	U	N	U	U	U	U	N	U	U	N	N	U	U	N	U	U	U	U	N	U	U	N
spiderwort	U	U	U	U	N	N	N	N	U	U	U	U	N	N	N	N	N	N	N	N	U	U	U	U	N	N	N	N
stiff sunflower	U	D	P	U	U	D	P	U	U	D	P	U	U	D	P	U	U	D	P	U	U	D	P	U	U	D	P	U
Texas croton	U	U	U	U	N	N	N	N	U	U	U	U	N	N	N	N	N	N	N	N	U	U	U	U	N	N	N	N
verbena	U	U	D	U	U	U	U	U	U	U	D	U	U	U	U	U	U	U	U	U	U	U	D	U	U	U	U	U
western ragweed	U	U	U	U	N	N	N	N	U	U	U	U	N	N	N	N	N	N	N	N	U	U	U	U	N	N	N	N
Shrubs																												
cactus	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
fringed sagewort	U	U	U	U	U	U	U	U	U	U	U	U	U	D	D	U	U	P	P	D	U	U	U	U	U	U	U	D
leadplant	U	P	D	U	U	P	D	U	U	P	D	U	U	P	D	U	U	P	D	U	U	P	D	U	U	P	D	U
rose	U	D	D	U	U	D	D	U	U	D	D	U	U	D	D	U	U	D	D	U	U	D	D	U	U	D	D	U
small soapweed	D	N	N	D	D	U	U	D	D	N	N	D	D	U	U	D	D	U	U	D	D	N	N	D	D	U	U	D
western sandcherry	D	P	P	D	D	U	U	D	D	P	P	D	P	U	D	P	D	U	U	D	D	P	P	D	P	U	U	P
Trees																												
ponderosa pine	U	T	T	U	U	N	N	U	U	N	N	U	U	N	N	U	U	N	N	U	U	T	T	U	U	N	N	U
juniper	U	N	N	U	U	N	N	U	U	N	N	U	D	U	U	D	U	N	N	U	U	N	N	U	U	N	N	U

N = not used; **U** = undesirable; **D** = desirable; **P** = preferred; **T** = toxic
† Quarters: 1 – Jan., Feb., Mar.; 2 – Apr., May, Jun.; 3 – Jul., Aug., Sep.; 4 – Oct., Nov., Dec.

Animal Community – Grazing Interpretations

The following table lists suggested initial stocking rates for cattle under continuous grazing (year long grazing or growing season long grazing) under normal growing conditions; however, *continuous grazing is not recommended.* These are conservative estimates that should be used only as guidelines in the initial stages of the conservation planning process. Often, the current plant composition does not entirely match any particular plant community (as described in this ecological site description). Because of this, a field visit is recommended, in all cases, to document plant composition and production. More precise carrying capacity estimates should eventually be calculated using the following stocking rate information along with animal preference data, particularly when grazers other than cattle are involved. With consultation of the land manager, more intensive grazing management may result in improved harvest efficiencies and increased carrying capacity.

Plant Community	Production (lbs./acre)	Carrying Capacity* (AUM/acre)
Bluestem/Prairie Sandreed	2400	0.76
Prairie Sandreed/Needleandthread	2000	0.63
Dropseed/Bluegrass	1400	0.44
Juniper/Ponderosa Pine	900	**

* Continuous season-long grazing by cattle under average growing conditions.
** Highly variable; stocking rate needs to be determined on site.

Grazing by domestic livestock is one of the major income-producing industries in the area. Rangeland in this area may provide year-long forage for cattle, sheep, or horses. During the dormant period, the forage for livestock will likely be lacking protein to meet livestock requirements, and added protein will allow ruminants to better utilize the energy stored in grazed plant materials. A forage quality test (either directly or through fecal sampling) should be used to determine the level of supplementation needed.

Hydrology Functions

Water is the principal factor limiting forage production on well drained portions of this site. Normal rainfall is limited to 17-22 inches per year. Soils on this site are in Hydrologic Soil Group A and B. Some areas have high water tables. On well drained portions of this site, infiltration potential is high. On well drained areas, significant runoff is expected to occur only during intense storms (refer to Section 4, NRCS National Engineering Handbook for runoff quantities and hydrologic curves).

Recreational Uses

This site provides hunting, hiking, photography, bird watching and other opportunities. The wide variety of plants that bloom from spring until fall have an esthetic value that appeals to visitors.

Wood Products

Timber harvest of juniper and ponderosa pine may occur on localized areas of this site.

Other Products

Seed harvest of native plant species can provide additional income on this site.

Supporting Information

Associated Sites

(064XY012NE) – Sands
(064XY040NE) – Shallow
(064XY036NE) – Loamy 17-20" P.Z.
(064XY024NE) – Subirrigated

Similar Sites

(064XY036NE) – Loamy 17-20" P.Z. [less bluestem; more western wheatgrass]
(064XY012NE) – Sands [more sand bluestem; no western wheatgrass; less blue grama]

Inventory Data References

Information presented here has been derived from NRCS clipping data and other inventory data. Field observations from range trained personnel was also used. Those involved in developing this site include: Jill Epley, Range Management Specialist, NRCS; Rick Peterson; Range Management Specialist, NRCS; David Steffen, Range Management Specialist, NRCS; Jeff Vander Wilt; Range Management Specialist, NRCS.

Data Source	Number of Records	Sample Period	State	County
SCS-RANGE-417				
Ocular estimates				

State Correlation

This site has been correlated with Nebraska, South Dakota and Wyoming in MLRA 64.

Field Offices

Chadron, NE	Dawes/Sioux	Martin, SD	Bennett/Shannon	Valentine, NE	Cherry
Custer, SD	Custer	Pine Ridge, SD	Pine Ridge IR	Wall, SD	East Pennington
Hot Springs, SD	Fall River	Rosebud, SD	Rosebud IR	White River, SD	Mellette
Kadoka, SD	Jackson	Rushville, NE	Sheridan		

Relationship to Other Established Classifications

Level IV Ecoregions of the Conterminous United States: 25a – Pine Ridge Escarpment, 43h – White River Badlands, and 43i – Keya Paha Tablelands.

Other References

High Plains Regional Climate Center, University of Nebraska, 830728 Chase Hall, Lincoln, NE 68583-0728. (http://hpccsun.unl.edu)

USDA, NRCS. National Water and Climate Center, 101 SW Main, Suite 1600, Portland, OR 97204-3224. (http://wcc.nrcs.usda.gov)

USDA, NRCS. National Range and Pasture Handbook, September 1997

USDA, NRCS. National Soil Information System, Information Technology Center, 2150 Centre Avenue, Building A, Fort Collins, CO 80526. (http://nasis.nrcs.usda.gov)

USDA, NRCS. 2001. The PLANTS Database, Version 3.1 (http://plants.usda.gov). National Plant Data Center, Baton Rouge, LA 70874-4490 USA.

USDA, NRCS, Various Published Soil Surveys.

Site Description Approval

State Range Management Specialist	Date	State Range Management Specialist	Date

State Range Management Specialist	Date